

SMPSU with a Relay

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Switched mode power supply units (SMPSUs) are popular but difficult to build oneself as well problematic when it comes to understanding their design principles. Building your own SMPSU typically requires a lot of expertise, hard to find components and time. The circuit shown here is educational only and devised to demonstrate the principle of the step-up switch mode circuits. It is not intended to be incorporated in a 'real' design. Relay Re1 has a normally-closed (NC) change-over contact and is connected to

act as a vibrator. When power is applied to the circuit, the relay is energized and actuates its contact. This action may appear to break the circuit. However, the energy stored in the relay coil will produce an induced voltage which is fed to D1 and C1 for rectification and smoothing. The output voltage will be of the order of 150 V and strongly dependent on the type of relay used. In general, the faster the relay, the higher the output voltage. The circuit will oscillate at a low frequency (100-200 Hz), and a buzzing sound will be heard from the relay.

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